

DESCRIPTIONS OF NEW SPECIES OF UNIONES FROM FLORIDA.

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Unio Fryanus. Plate II, fig. 1.

Shell elliptical, very smooth, very inequilateral, substance of the shell thin, inflated in the umbonial region, beaks projecting very slightly beyond the hinge line, ligament short, thin and light brown. Epidermis yellowish red and covered with bright green rays which are so thickly set upon the upper portion of the shell as to give that part, a bright green color: the young are of a bright shining green over the entire surface, the green being interrupted by heavy lines of growth of a light red color. Ligamental margin sub-angular before and slightly arched, posterior margin disposed to be slightly bi-angular and quite uniformly rounded above, anterior margin abruptly rounded; basal margin uniformly rounded; cardinal and lateral teeth double in the left and single in the right valves, the cardinal teeth short, oblique stout and crenulate, lateral teeth slightly and uniformly curved, dorsal cicatrices deep and slightly posterior to the cavity of the beak, anterior cicatrices slightly impressed and distinct. Nacre quite uniformly purplish.

Diameter .60. Length 1.00. Breadth, 1.75 inches.

Habitat. Lake Ashby, Volusia County, Florida.

Mus. Acad. Nat. Sciences. Phila. Newcomb Coll., Cornell Univ. National Museum.

Remarks. This species is highly polished, and the young are rich in lustrous rays. The strongest affinity is with *U. sparus* Lea. It approaches *U. fuscatus* Lea, but is thicker through the umbonial elevation, and the umbos are farther forward, and its valves thicker, heavier, and not so flat. The dorsal view shows it is enlarged anteriorly, while that of *fuscatus* is not so. It can not be mistaken for *U. perlucens* or *U. micans* Lea. Abundant on the muddy bottom of the outlet of Lake Ashby, Volusia Co. Fla.

Named for Mr. T. Marshall Fry, of Syracuse, N. Y. who is an enthusiastic collector and student of the Unionidæ.

Unio Websterii Plate II, fig. 2.

Shell oblong, inequilateral, considerably inflated, rounded at the sides, surface roughened by numerous obtuse irregular lines of growth, substance of the shell thin, ligamental margin moderately arcuate and rather short, posterior margin slightly biangular, liga-

mental area narrow, umbonial slope subangular, anterior margin projecting and uniformly rounded, basal margin slightly and uniformly curved. Epidermis reddish, interrupted by coarse, distant radiating lines of a blackish color. Greatest length near the middle of the shell, beaks eroded and ornamented with three to five radiating elevations. Umbos broad and rounded: nacre delicate flesh color to pink, usually clear, rarely mottled with waxy spots; cardinal teeth disposed to be double in both valves, slender, oblique, long and delicately crenulate, lateral teeth long and heavy, curved; cavity of the beak deep and rounded, cavity of the shell deep, and occasionally the surface is interrupted with undulating ridges near the anterior portion of the cavity; dorsal cicatrices forming a continuous line extending from the base of the posterior cardinal tooth backward for one half inch and directly under the edge of the roof to the beak cavity; anterior cicatrices small, the superior one undermining the anterior portion of the cardinal tooth, posterior cicatrices confluent.

Diameter $1\frac{1}{2}$. Length 2.50. Breadth $4\frac{1}{4}$ inches.

Habitat. Lake Woodruff, Volusia Co. Florida.

Mus. Acad. Nat. Sciences. Newcomb Coll., Cornell Univ. National Museum.

Remarks. This is the largest *Unio* yet found in Florida waters. Its place is between *U. Savannahensis* Lea and *U. Mecklenburgensis* Lea. It is more inflated than the former, thinner, has more prominent and narrower beaks, higher and more rounded umbos, deeper and smaller anterior cicatrices and the teeth are lighter.

We are pleased to name this species after our botanical friend Mr. Buchard Webster of Lake Helen, Florida, who, with his father, often made our collecting trips more pleasant.

Unio Waltoni. Plate II, fig. 3.

Shell compressed on the posterior slope, transversely elongated, very inequilateral; valves rather thin, beaks not prominent and eroded; epidermis brownish black, apparently rayless, valves anteriorly rounded and oblique upward and sharply angled above, obtusely rounded behind; cardinal teeth nodulous, small, complex and serrated; lateral teeth lamellar and slightly curved upwards; nacre purple. Basal margin very much exenrvated.

Diameter 1.00. Length 1.50. Breadth 4 inches.

Habitat. Lake Woodruff, Volusia Co., Florida,

Mus. Acad. Nat. Sci. Newcomb Coll. Nat. Mus.

Remarks. This species has the general form of *U. Emmonsii* Lea, and is more in affinity with that species, than with *U. Shepherdianus* Lea. The former is a much heavier species, and with coarse heavy teeth. *U. Shepherdianus* Lea, is deeply emarginate on its basal margin, and the sides of its valves are very much constricted obliquely from its projecting umbos down, while *U. Waltoni*, is very *convex* in its basal margin and its umbos *not* projecting, and its anterior end very obliquely rounded, instead of evenly rounded, and a *thin* shell. It can not be confounded with *U. perlatus*, Lea, though the obliquity of the anterior end is much alike in both. It is with much pleasure that we name this curious species, after Mr. John Walton, a zealous and working conchologist, and artist of Rochester N. Y.

Unio Dorei. Plate III, fig. 1.

Shell ovate, heavy; polished, rayless; epidermis reddish, with brownish colored elevations or growth-ridges; beaks blunt and massive, dorsal margin very broad, short and slightly arched; posterior margin quite straight; Umbonial angle sharp and supplemented by two parallel elevations which are more or less broken by undulations; basal margin slightly rounded, anterior margin truncate and angulated above; cardinal teeth with a tendency to being double in both valves, very massive, smoothish; lateral teeth very long, heavy and uniformly curved; nacre a rich salmon color; cavity of the beaks almost wanting; of the shell considerable. Named for Mr. H. E. Dore, and enthusiastic collector of mollusca of Portland Oregon.

Diameter 1.25. Length 1.6. Breadth 2.60 inches.

Habitat. Lake Monroe, Florida.

Mus. Acad. Sciences; Coll. B. H. Wright.

Remarks. The affinity of this species is with *U. Conasaugaensis* Lea, but the teeth differ, the umbos of the latter are not so broad and blunt, and are farther from the anterior end, and has a *white* nacre. There is much disparity between it and *U. Buckleyi* Lea.

Unio Averellii. Plate III, fig. 3.

Shell obovate, thin, fragile, slightly inflated, inequilateral, smooth, polished, interrupted by numerous green capillary rays arranged in fascicles which are narrowest at the anterior end of the shell, and broaden gradually until near the umbonial angle where they merge together, giving the posterior portion of the shell a dark green color; epidermis yellowish; beaks flattened, rather blunt, slightly and coarsely undulated; dorsal margin nearly straight; ligament short, horn colored, thin; anterior margin short and gracefully rounded; posterior

margin bluntly rounded, basal margin with a tendency to emargination in old females; quite uniformly curved in males; greatest diameter near the middle of the ligament, greatest length at posterior end of dorsal line; cardinal teeth double in both valves, compressed, very oblique, crenulate, the anterior tooth in the right valve is much the smaller, as is the posterior one of the left valve; lateral teeth single in the right and double in the left valve, curved and slender; nacre light purple and spotted with a few dark-waxy spots; dorsal cicatrices two to four and in a diagonal row from the base of the anterior cardinal tooth across the centre of the cavity of the beak, anterior cicatrices distinct and well impressed.

Diameter .8. Length 1.2. Breadth $2\frac{1}{2}$ inches.

Habitat. Lake Ashby, Volusia County, Florida.

Museum Acad. Nat. Sci. Phila. Newcomb Coll., Cornell Univ. Nat. Museum.

Remarks. This delicate species, is possibly related to *U. papyraceus* Gould. But Dr. Gould in his description of that species, says that "it resembles *Anodonta Couperiana* Lea, in shape, delicacy and even color."

But there is nothing in *U. Averellii* to remind one of *An. Couperiana* Lea. It has the outline of *U. occultus* Lea, but its affinity is with *U. rutilans* Lea, but differs in being very thin, almost paper-like, less blunt at each end, and without a depressed area at the anterior ligament. Named for Mr. Wm. D. Averell publisher of the Conchologist's Exchange, of Philadelphia, Pa.

Unio Nolani. Plate IV, fig. 1.

Shell wide, smooth, rather thick, beautifully polished throughout, and entirely covered with heavy greenish rays; epidermis yellowish and often olivaceous; dorsal margin arcuate, anterior margin gracefully and perfectly rounded, basal margin subemarginate, posterior margin uniformly rounded from the end of the ligament to the base with no tendency to biangulation; umbonial angle flatly rounded; umbonial slope flattened, depressed in the middle; beaks small, pointed, undulated, and rather prominent; cavity of the shell small; cardinal teeth heavy, erect, grooved, double in the left and single in the right valve; lateral teeth curved, heavy and much roughened; nacre beautiful pink and iridescent.

Diameter .9 Length 1.5. Breadth 3 inches.

Mus. Acad. Nat. Sciences. My own cabinet.

Habitat: A creek flowing into St. John's River, near Palatka, Fla.

Remarks. This beautiful shell was found by Mr. J. B. Upson several years ago. Its affinity is with *U. corneus* Lea, and with *U. Postellii* Lea. From the latter it differs in not having a striated and scaly epidermis, and in not having thick, but compressed cardinal teeth. The former has much heavier teeth, the groove of the lateral teeth being shorter and much farther from the cardinal teeth, and the beaks farther from the anterior end, and the post-ligamental area much more conspicuous. It can not be taken for *U. planilateris* Con. which has a stramineous epidermis.

We name this peculiar species for Dr. Edw. J. Nolan, Librarian to the Academy of Natural Sciences of Philadelphia.

Unio Hinkleyi. Plate IV, fig. 2.

Shell oblong, trapezoidal, attenuated and pointed behind, smooth, slightly inflated, and often flatish; rather thin, polished above. Epidermis black, thickly covered with brown, indistinct fine rays, visible with transmitted light. Posterior margin subemarginate, raised into a compressed wing. Anterior margin rounded and slightly oblique. Dorsal margin a slightly arched curve. Basal margin slightly convex. Umbonial slope raised and obtusely rounded. Cardinal teeth compressed, thin, very oblique and grooved, double in both valves. Lateral teeth very long, slender and undulating, nearly straight. Dorsal cicatrices four or more in one or two rows. Nacre pinkish, and iridescent. Umbonial region broad and blunt, very slightly projecting, but often *deep*.

Diameter 1.00. *Length* 1.50. *Breadth* 3.00.

Habitat. Lake Monroe, Florida.

Mus. Acad. Nat. Sciences. National Museum.

Remarks. In outline this species is similar to that of *U. declivis* Say, but its black epidermis, its pinkish or purplish nacre, readily distinguishes it from that species.

It is dedicated to Mr. A. A. Hinkley, of Dubois Illinois, an active collector of Unionidæ.

Unio Simpsoni. Plate V, fig. 1.

Shell oblong-ovate, pointed behind, and often very slightly uncinate below the point, inequilateral, remarkably smooth and polished. Valves *thin*, slightly inflated, and rarely with a few coarse, perpendicular, impressed grooves near the centre. Sometimes the valves are very flat. Ligamental margin higher behind, and straight or slightly arched. Posterior slope biangular below, straight or

slightly emarginate, and raised into a distinct and angled carina, which is thin and compressed. Ligamental area often with several small plicæ. The posterior end is generally sharply compressed above and below, giving it a lance-shaped and ancipital appearance. Umbonal ridge depressed, narrow, and rounded. Anterior margin rounded and slightly oblique, basal margin convex. Epidermis yellowish-brown or olive colored, or even bright green, with slender green rays in uneven fascicles, or rayless and reddish-brown all over. Umbos very much flattened, and beaks very small and pointed, having a few concentric folds. Cavity of the beaks nearly obsolete. Dorsal cicatrices small and deep. Cardinal teeth oblique and very small. Lateral teeth long, thin, undulated and nearly straight. Nacre salmon or purple, or both mixed. Shell darker behind and at the base.

Diameter .75. Length 1.12. Breadth 2.30 inches.

Habitat. Lake Woodruff, Volusia Co., Florida.

Mus. Acad. Nat. Sciences. Cornell University. National Mus.

Remarks. The left beak is often shorter than the other. Its affinity is with *U. viridicatus* Lea, which has much larger cavities under the beaks, the lateral teeth coarser and not undulating and the anterior end not obliquely rounded, and is not rayed. It cannot be mistaken for *U. Jayanus* Lea. We have great pleasure in dedicating this species to Mr. Charles T. Simpson of Ogallala, Nebraska, who has done very much in studying the mollusca of Florida.

Unio Marshii. Plate V, fig. 2.

Shell somewhat narrow-elliptical, transverse, ventricose and very inequilateral, smooth, incremental lines close and slightly raised. Substance of the shell rather thin, and of very uniform thickness; swollen in the umbonal region; umbonal slope rounded; posterior slope compressed and rounded; dorsal margin nearly straight; anterior margin abruptly rounded; basal margin much excurvate and slightly constricted near the posterior extremity; posterior margin bluntly rounded and emarginate above; turned up, raised into a very small, depressed, and thin carina. Beaks blunt, broad, without concentric undulations but possessing three or four raised, radiating lines; epidermis remarkably thin, reddish brown below and greenish above, indistinctly and closely rayed over the anterior portion, and very dark or black on the posterior slope; nacre, a beautiful salmon varying to purple; cardinal teeth compressed, erect, striate, very oblique and disposed to be double in both valves; lateral teeth long,

solid and curved; dorsal cicatrices four, well impressed and situated under the base of the anterior end of the lateral teeth which continue almost to the cardinal teeth.

Diameter 1.3. Length 2.00. Breadth $3\frac{1}{4}$ inches.

Habitat. Lake Woodruff, Volusia Co., Florida.

Mus. Acad. Nat. Sci. Phila. Coll. of Berlin H. Wright and Mr. W. A. Marsh, Aledo, Illinois.

Remarks. This species, though belonging to the *Buckleyi* group, has specific characters distinguishing it from *U. Buckleyi* Lea; the adult is very excurvate on the basal margin, has a very smooth and polished epidermis, filled with obscure rays, the anterior end being directed obliquely upwards, characters not pertaining to adult *U. Buckleyi*. The symmetry of the dorsal and basal curves is peculiar, being in this character like the same curves of *U. symmetricus* Lea. Its affinity is with *U. Buddianus* Lea, differing in the teeth and other characters. Dedicated to Mr. Wm. A. Marsh, of Aledo Illinois, an amateur of the Unionidae.

Unio Dallii. Plate VI, fig. 1.

Shell ovate, pointed and flattened behind, the point being directed downward, in an uncinate manner. Polished above, and lustreless below, valves not thick, thicker before, epidermis black, rayless, with numerous striæ of scaly plicæ below the umbonial region. Ligamental margin much arched, with an angle at each end. Posterior margin usually slightly and evenly convex. Basal margin emarginate near the posterior end, anterior margin nearly truncated, or abruptly rounded. Umbonial slope very depressed, obtuse and scarcely carinate, and the sides of the valves are decidedly flattened just forward of the umbonial slope. Greatest diameter in the middle of the shell. Umbos broad and flattened, obtuse, projecting, and very much eroded. Sides with numerous close coarse lines of growth. Nacre salmon or pink, varying to copper color, iridescent and usually with wax-colored spots, which often are confluent and cover the interior. Cavity of the shell, and of the beaks shallow. Lateral teeth long, heavy and much curved. Cardinal teeth coarse, deep, divergent. Anterior cicatrices distinct, the larger are deep. Posterior cicatrices confluent, well impressed. The type specimen is about two-thirds the full size.

Diameter 1.00. Length $1\frac{5}{8}$. Breadth $2\frac{1}{2}$ inches.

Habitat. Lake Beresford, Volusia Co., Florida.

Mus. Acad. Nat. Sciences. Newcomb Coll. National Museum.

Remarks. There is an affinity of this species with *U. venustus* Lea, but is more compressed behind and is larger. It has been largely distributed as *U. Buckleyi*, thus causing much confusion as to what the latter really is. *U. Buckleyi* Lea, is more pointed behind, not uncinatate there nor emarginate on the basal margin. Its umbos are farther forward and less elevated. Its greatest diameter as well as greatest length, is just behind the beaks, while in *U. Dallii* the greatest length is through the summit of the umbos.

It is named for Mr. W. H. Dall of the Smithsonian Institution.

Unio Tryoni. Plate VI, fig. 2.

Shell wide, narrow-elliptical, compressed posteriorly, thin, polished above. Umbos slightly elevated, the beaks being close to the anterior end, and in the young undulated; epidermis brownish or grayish black, raised into numerous fine scaly striæ, roughish, rayless, or with some capillary obscure rays near the centre of the valves. Dorsal margin straight, posterior margin bluntly rounded or truncate, and triangular; often subemarginate above, basal margin slightly convex, anterior margin broadly rounded. Cardinal teeth of the left valve are long, erect and widely separated to receive the single wide tooth of the right valve. The anterior tooth is shorter and less pointed than the posterior one, and the latter is curved upward. Lateral teeth very long, rather slender and nearly straight. Nacre livid or light salmon colored and often with several dark-brown circular spots. Cavity of the beaks very shallow.

Diameter 1.25. Length 1.75. Breadth 4 inches.

Habitat. Lake Woodruff, Volusia Co., Florida, near De Leon Springs.

Mus. Acad. Nat. Sciences. Newcomb Collection. National Mus.

Remarks. This species is much thinner and lighter than *U. Ocmulgeensis* Lea, with which there is the affinity of outline. It is much narrower than *U. Buddianus* Lea, and its cardinal teeth are not oblique as in the latter. It is lighter, more rounded before and more attenuated behind, and has a much shorter hinge line. Some forms of it approach *U. Jayanus* Lea.

It gives us much pleasure to dedicate this species to the late Mr. George W. Tryon Jr., author of "Manual of Conchology" and other conchological works.